

CHAPTER 8

NUTRITION AND DIET

The important role of nutrition and diet in overall health is widely recognized. As a member of the Navy, and as a Dental Technician, you must be healthy so you can perform your professional duties. Part of maintaining a healthy lifestyle starts with eating a well-balanced diet and exercising. Many people in the Navy and Marine Corps do not have a proper daily diet and you may be responsible for providing counseling on nutrition to your dental patients. Some patients may need a little motivation. If you are healthy and enthusiastic, the knowledge you share with them on nutrition and diet may be more credible and may help them to adopt a healthier lifestyle.

ESSENTIAL NUTRIENTS

An essential nutrient is defined as one that must be provided by food because the body cannot synthesize it at a rate sufficient to meet our needs. Nutrients can be divided into six main classes: carbohydrates, fat, protein, minerals, vitamins, and water. Good food sources contain substantial amounts of nutrients in relation to caloric contents and contribute at least 10 percent of U.S. Recommended Dietary Allowance for the nutrient in the selected serving size. Most of us can get enough of these nutrients each day by eating a variety of foods from the five major food groups. The six classes of nutrients are described as follows:

- **Carbohydrates** include starches, sugars and dietary fiber. Starch and sugar supply the body with energy. Dietary fiber provides bulk to the diet, which promotes regularity.

- **Proteins** are the building blocks of the body. Proteins are needed for growth, maintenance, and replacement of body cells. They also form hormones and enzymes used to regulate body processes. Extra protein is used to supply energy or is changed into body fat.

- **Fats** provide energy and help carry fat soluble vitamins. Fats also add flavor to foods. Some fats help form cell membranes and hormones.

- **Vitamins** are organic substances needed by the body in very small amounts. They do not supply energy, but help release energy from carbohydrates,

fats, and proteins. They also help in other chemical reactions in the body.

- **Minerals** are inorganic compounds found in foods, body structures, and compounds in the body that regulate body processes. Minerals are also needed in relatively small amounts and do not supply energy. Minerals are used to build strong bones and teeth, and to make hemoglobin in red blood cells. They help maintain body fluids and help other chemical reactions in the body.

- **Water** is often called the “forgotten nutrient.” It is needed to replace body fluids lost in urine and sweat. Water helps to transport nutrients, remove waste, and regulate body temperature.

COMPLEX CARBOHYDRATES

One gram of carbohydrates provides four calories. A calorie is not a nutrient. It is a measure of the energy supplied by food when it is used by the body. Complex carbohydrates, such as starches, are in breads, cereals, pasta, rice, dry beans and peas, and other vegetables, such as potatoes and corn.

SIMPLE CARBOHYDRATES

Simple carbohydrates are found in sugars, honey, syrup, jam, and many desserts. Sugar can contribute to tooth decay and should be used in moderation.

PROTEINS

One gram of protein provides 4 calories. Protein is found in both animals and plants. All protein is made up of small building blocks called amino acids. There are approximately 20 amino acids. Our body can make all but 9 of these. The 9 that we can't make are called “essential amino acids.” We must get them from food, and we need all 9 at one time so our body can function properly. The only foods that contain all 9 are animal foods (meat, milk, eggs, etc.). For this reason, animal foods are called “complete” proteins. Plants (grains such as rice, corn, beans, and wheat) each contain several but not all 9 essential amino acids.

FAT AND CHOLESTEROL

A diet high in fat, especially saturated fat and cholesterol, contributes to elevated blood cholesterol levels in many people. For many, eating diets lower in saturated fat and cholesterol reduces high blood cholesterol levels. Adults over the age of 30 should have a serum cholesterol level of under 200 mg/dL. Health experts agree that less than 30% of our total calories per day should come from fat. Reducing dietary fat is also a good way to limit calories. Decreased fat intake results in fewer calories without a reduction in most nutrients. All types of fat provide 9 calories per gram. Fats come from animal and vegetable sources such as meat, milk, cream, butter and cheese. Cooking oils, salad dressings, and nuts are also dietary sources of fats.

VITAMINS

There are 13 vitamins, and they fall into one of two categories: fat soluble and water soluble.

Fat Soluble Vitamins

Fat soluble vitamins are vitamins the body can store (in fat). Excess amounts may have toxic effects. Fat soluble vitamins include A, D, E, and K.

Vitamin A—Vitamin A is involved in the formation of and maintenance of healthy skin, hair, and mucous membranes. Vitamin A helps us to see in dim light and is necessary for proper bone growth, tooth development, and reproduction. Good sources of vitamin A include yellow, orange, dark-green vegetables, and fruits, as well as, liver, eggs, cheese, butter, and milk.

Vitamin D—Vitamin D promotes calcium and phosphorous absorption and is required for the formation of healthy bones and teeth. Good sources include fortified milk, egg yolk, liver, tuna, and cod liver oil. Vitamin D is produced in the body on exposure to sunlight.

Vitamin E—Vitamin E protects vitamin A and essential fatty acids from oxidation in the body cells and prevents breakdown of body tissues. Good sources include vegetable oils, fortified cereals, whole grain cereals and bread, nuts, wheat germ, and green leafy vegetables.

Vitamin K—Vitamin K includes a group of vitamins that promote normal clotting of the blood and helps maintain normal liver functions. Good sources are green leafy vegetables, liver, soybean, and other vegetable products.

Water Soluble Vitamins

Water soluble vitamins include vitamin C, vitamin B-6, vitamin B-12, folate, thiamin, riboflavin, niacin, pantothenic acid, and biotin. For the most part, water soluble vitamins are not stored. Thus, they should be taken in adequate amounts each day.

MINERALS

Minerals are inorganic compounds that are necessary in very small amounts for proper growth, development, and overall health. They make up a major portion of bones and teeth, making them rigid in their composition. Some of the major minerals are calcium, phosphorus, iron, potassium, zinc, and magnesium.

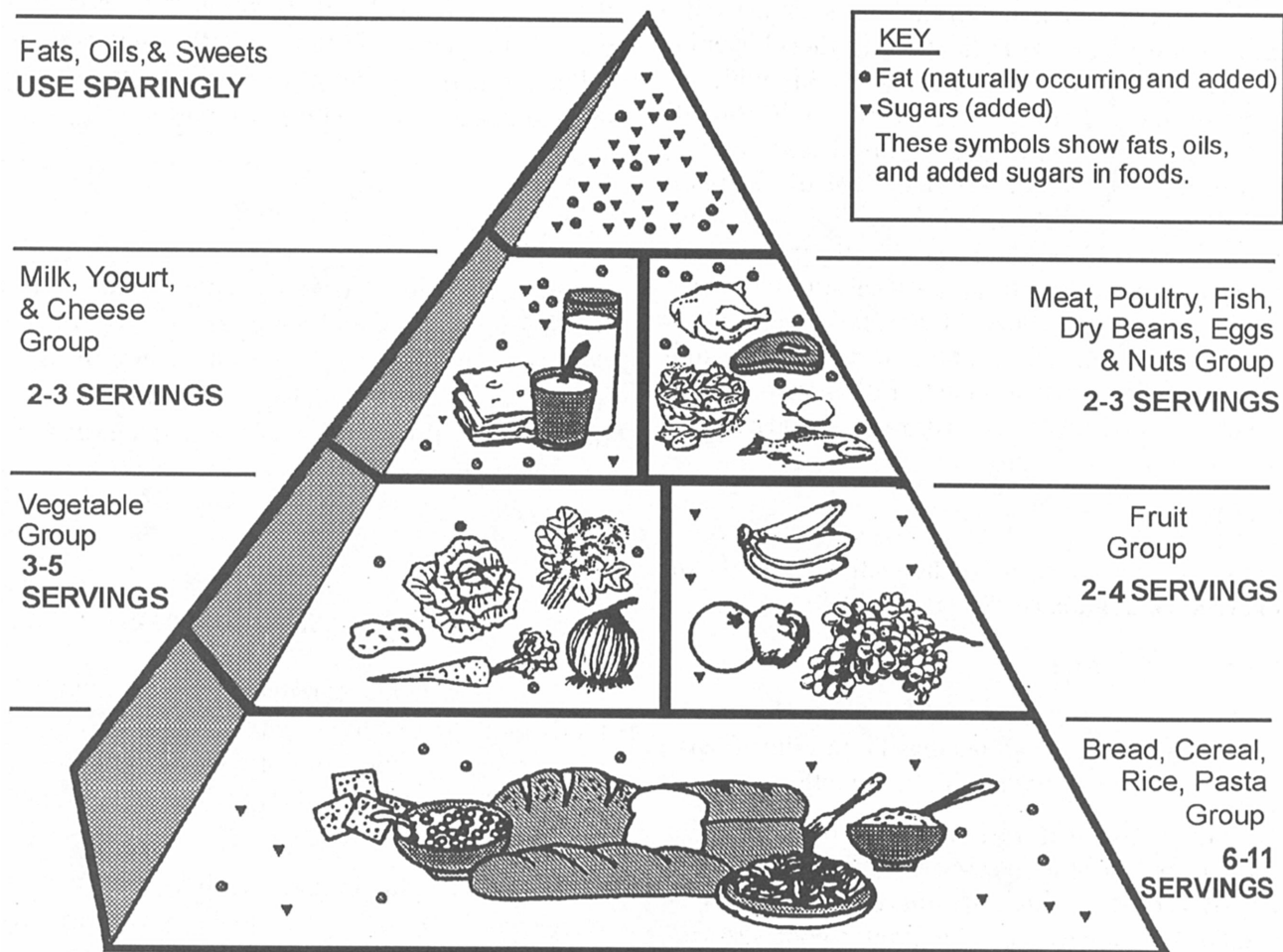
FOOD GUIDE PYRAMID

The food guide pyramid (fig. 8-1) emphasizes foods from the five food groups shown in the sections of the pyramid. Each of these groups provide some, but not all, of the nutrients we need. For good health we need them all.

The food pyramid graphically communicates the message of the Dietary Guidelines for Americans. Diets should be built upon a base of complex carbohydrates and less fats. The placement of the food groups starting at the base of the pyramid conveys the current recommendations. These recommendations are as follows:

- Eat more grains, vegetables, and fruits.
- Eat moderate amounts of lean meats and dairy foods.
- Use sweets, fats, and oils sparingly.

It is recommended that you eat a diet that is high in complex carbohydrates and low in protein and fat. Your diet should consist of at least 5 combined servings of fruits and vegetables each day. Avoid added fat when possible. Eat at regular intervals when possible, and avoid snacking late at night. For detailed information on nutrition, consult *Navy Nutrition and Weight Control Guide*, NAVPERS 15602; and the *Fat, Cholesterol and Calorie List for General Messes*, NAVSUP 580.



DTB1f0801

Figure 8-1.—Food guide pyramid.

PREVENTIVE DENTISTRY AND NUTRITION

It is known that bacteria in dental plaque uses the nutrients in sugary type foods to produce acids. (Dental plaque is discussed in chapter 5, “Oral Pathology,” and in *Dental Technician, Volume 2*, chapter 3, “Preventive Dentistry.”) Foods that contain carbohydrates (high sugar content) are referred to as being cariogenic (conductive to the production of dental caries). Dental caries may start when poor oral hygiene is present. The decay process begins when dental plaque and the acid produced from cariogenic

foods are left on the teeth for extended periods. Eventually, the acid demineralizes or breaks down enamel and dentin.

To reduce the possibility of dental decay, you should limit the ingestion of sweets to mealtime, and brush and floss thoroughly after meals. Some of the less cariogenic snack foods include fruits and vegetables. However, the least cariogenic snack foods are limited to skim milk, sugar free gum, sugarless soft drinks, sugarless gelatins, and a few others. **Ideally, caries may be avoided by properly brushing and flossing right after eating.**

